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DEPARTMENT OF TRANSPORTATION
NATIONAL TRANSPORTATION SAFETY BOARD
WASHINGTON, D.C. 20591

OFFICE OF
THE CHAIRMAN

January 30, 1970

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Honorable John H. Shaffer
Administrator
Federal Aviation Administration
Washington, D. C. 20590

Dear Mr. Shaffer:

During the public hearing on the midair collision problem, our attention was directed to the absence of a training requirement for the proper method of time-sharing or scanning programs, both inside and outside the cockpit. The testimony of Mr. E. King Stodola (pages 791-815) was quite interesting in this regard. It is noted, also, that there are no visual training aids for external target detection and definition incorporated in the present simulators, nor has any requirement for a visual training aid of this type been laid down for the simulators that are now under development.

It is recognized that many devices and systems are now in the process of development; however, these devices are now in the embryonic stage and will take time to bring to fruition. Also, many of these devices are expensive and, in order to be effective, they would be required on all aircraft. This is not to suggest that development of these systems cease but, since we do not have the luxury of time, we must take steps to improve and utilize what is now available.

A study performed, by Gabriel and Burrows, at the Douglas Aircraft Division, Long Beach, California, February 1968, for the Naval Training Devices Center did show that through training for "time-sharing" of the pilots' attention, very large gains could be achieved in the probability of detection. Also, there was a definite extension of the mean time during which the pilot was looking outside of his aircraft. This study was performed on single-piloted aircraft. However, it can be hypothesized that the increases gained would be equal, if not greater, in multipiloted, air carrier aircraft.

It is recommended that a requirement be added to the present Federal Aviation Regulations for ground training of pilots in the proper scan patterns to optimize the probability of detecting other

aircraft and to increase the effective time the pilot's eyes are looking outside of the cockpit. Also, a requirement for the adaptation of visual training aids for outside target detection and definition should be added to the simulators now in use or being developed for future use.

It is recognized that the above steps are made toward the large commercial segment of the aviation industry and there is as great a need for a training program for the private pilot as for the airline pilot. Therefore, a program whereby scan patterns and target detection are included in the training program for licensing and upgrading of the private pilot is necessary. Also, action to expedite the development of visual training aids of a less exotic nature than those required for simulators should be given a high priority--these aids to be made available to the private pilots through fixed-base operators and other appropriate outlets.

Sincerely yours,

John H. Reed
Chairman